

**REMARKS**

Claims 1-20 are pending, with claims 1-10 withdrawn from consideration and claims 11-20 under current examination.

**Regarding the Office Action:**

In the Office Action, the Examiner rejected claims 11, 19, and 20 under 35 U.S.C. § 102(e) as being anticipated by Burke (U.S. Patent Publication No. 2002/0098789 A1)<sup>1</sup>; rejected claims 12-16 under 35 U.S.C. § 103(a) as being unpatentable over Burke in view of You et al. (U.S. Patent No. 6,663,787 B1); and rejected claims 17 and 18 under 35 U.S.C. § 103(a) as being unpatentable over Burke in view of Jang et al. (U.S. Patent No. 5,702,977). Applicants traverse the rejections for the following reasons.

**Rejection of Claims 11, 19, and 20 under 35 U.S.C. § 102(e):**

Applicants respectfully traverse the rejection of claims 11, 19, and 20 under 35 U.S.C. § 102(e) as being anticipated by Burke. In order to properly establish that Burke anticipates Applicants' claimed invention under 35 U.S.C. § 102, each and every element of each of the claims in issue must be found, either expressly described or under principles of inherency, in that single reference. Furthermore, "[t]he identical invention must be shown in as complete detail as is contained in the ... claim." See M.P.E.P. § 2131, quoting *Richardson v. Suzuki Motor Co.*, 868 F.2d 1126, 1236, 9 U.S.P.Q.2d 1913, 1920 (Fed. Cir. 1989).

Burke does not disclose each and every element of Applicants' claimed invention. For example, independent claim 11 recites a method for manufacturing a semiconductor device that includes, inter alia,

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<sup>1</sup> Applicants note that the rejection of claims 11, 19, and 20 under 35 U.S.C. § 102(e) was improperly listed under the heading of "Claim Rejections - 35 USC § 103." Office Action, page 2.

subjecting said treating film to polishing treatment using a polishing pad while feeding a slurry onto said treating film, said polishing pad comprising a matrix, and cells and/or a recessed portion-forming material both having an average diameter ranging from 0.05 to 290  $\mu\text{m}$ , dispersed in said matrix, and occupying a region ranging from 0.1% by volume to 5% by volume based on an entire volume of said pad, said matrix having a major surface which faces said treating film and has a roughness of 5  $\mu\text{m}$  or less.

The Examiner considered Burke's polishing pad as corresponding to Applicants' claimed polishing pad. Office Action, page 2. Burke's polishing pad includes solid or substantially void-free particles (VFP) 12 and surface pores 14 in a polymeric pad matrix 11. Burke, pages 2-3, paragraph [0036]. VFP 12 "are liberated from the pad preferably by rapidly chemically dissolving during a pad conditioning treatment . . . [leaving] the surface pore 14." Id., pages 2-3, paragraph [0036].

The Examiner considered Burke's surface pores 14 as corresponding to Applicants' claimed cells, and alleged that "[t]he cells [14 of Burke] . . . make up a very small percentage of the total pad volume (fig 3), the percentage approximately 1% of the pad volume." Office Action, page 2. However, Burke does not teach anywhere in its disclosure that the volume percentage of surface pores 14 in the polishing pad is approximately 1%. Neither does Fig. 3 of Burke show or indicate such a percentage. Applicants respectfully request that the Examiner provide support for his allegation. Absent such support, the rejection of claim 11 under 35 U.S.C. § 102(e) as anticipated by Burke is improper and should be withdrawn.

In addition, in rejecting claim 11 under 35 U.S.C. § 102(e) as anticipated by Burke, the Examiner failed to address Applicants' claimed "recessed portion-forming material." This rejection is therefore also improper at least because the Examiner failed to show that Burke teaches each and every element of the claimed invention.

To the extent the Examiner may consider Burke's VFP 12 as Applicants' claimed "recessed portion-forming material," Applicants note that Burke does not teach that the volume percentage of VFP 12 and surface pores 14 in the polishing pad is about 0.1% to 5%. Burke actually teaches away from such a range. Burke teaches that, as an example of forming a polishing pad, "[a] polymeric matrix can be prepared by mixing 2997 grams of Uniroyal adiprene L-325 polyether-based liquid urethane with approximately 50% by volume granular Polyox WSRN-80 (from Union Carbide) powder (or other substantially void polymeric power . . . )." Burke, page 4, paragraph [0086]. Apparently, the granular Polyox WSRN-80 powder serves as VFP 12 in the polishing pad, which has a volume percentage of about 50%. Therefore, the volume percentage of VFP 12 and surface pores 14 in the polishing pad should be at least about 50%, far greater than 0.1% to 5% as Applicants claimed in claim 11.

In view of the above, Burke fails to teach at least

subjecting said treating film to polishing treatment using a polishing pad while feeding a slurry onto said treating film, said polishing pad comprising a matrix, and cells and/or a recessed portion-forming material both having an average diameter ranging from 0.05 to 290  $\mu\text{m}$ , dispersed in said matrix, and occupying a region ranging from 0.1% by volume to 5% by volume based on an entire volume of said pad, said matrix having a major surface which faces said treating film and has a roughness of 5  $\mu\text{m}$  or less.

as recited in claim 11. Claim 11 is therefore allowable over Burke. Claims 19 and 20 depend from claim 11 and are also allowable at least because of their dependence from an allowable base claim.

#### **Rejection of Claims 12-16 under 35 U.S.C. § 103(a)**

Applicants respectfully traverse the rejection of claims 12-16 under 35 U.S.C. § 103(a) as unpatentable over Burke in view of You et al.. Applicants disagree with the Examiner's arguments and conclusions. A *prima facie* case of obviousness has not been established.

“To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant’s disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).” M.P.E.P. § 2142, 8th Ed., Rev. 2 (May 2004), p. 2100-128.

A *prima facie* case of obviousness has not been established because, among other things, neither Burke nor You et al., nor their combination, teaches or suggests each and every feature of Applicants’ claims.

First, as noted above, Burke fails to teach or suggest at least

subjecting said treating film to polishing treatment using a polishing pad while feeding a slurry onto said treating film, said polishing pad comprising a matrix, and cells and/or a recessed portion-forming material both having an average diameter ranging from 0.05 to 290  $\mu\text{m}$ , dispersed in said matrix, and occupying a region ranging from 0.1% by volume to 5% by volume based on an entire volume of said pad, said matrix having a major surface which faces said treating film and has a roughness of 5  $\mu\text{m}$  or less.

as recited in independent claim 11, from which claims 12-16 depend.

You et al. fails to cure the deficiencies of Burke. You et al. only teaches a method for manufacturing a semiconductor device using copper and copper alloy contacts. You et al., col. 1, ll. 12-14. You et al. teaches a CMP process for removing certain metal portions, but does not disclose the particulars of the CMP process. You et al., col. 20, ll. 42-44. Therefore, You et al. fails to teach or suggest at least

subjecting said treating film to polishing treatment using a polishing pad while feeding a slurry onto said treating film, said polishing pad comprising a matrix, and cells and/or a recessed portion-forming material both having an average diameter ranging from 0.05 to 290  $\mu\text{m}$ , dispersed in said matrix, and occupying a region ranging from 0.1% by volume to 5% by volume based on an

entire volume of said pad, said matrix having a major surface which faces said treating film and has a roughness of 5  $\mu\text{m}$  or less.

as recited in independent claim 11.

In view of the above, Burke and You et al., taken alone or in combination, fail to teach or suggest each and every element of independent claim 11, from which claims 12-16 depend.

Claims 12-16 are therefore allowable over Burke and You et al.

**Rejection of Claims 17 and 18 under 35 U.S.C. § 103(a)**

Applicants respectfully traverse the rejection of claims 17 and 18 under 35 U.S.C. § 103(a) as unpatentable over Burke in view of Jang et al. Applicants disagree with the Examiner's arguments and conclusions. A *prima facie* case of obviousness has not been established.

A *prima facie* case of obviousness has not been established because, among other things, neither Burke nor Jang et al., nor their combination, teaches or suggests each and every feature of Applicants' claims.

First, as noted above, Burke fails to teach or suggest at least

subjecting said treating film to polishing treatment using a polishing pad while feeding a slurry onto said treating film, said polishing pad comprising a matrix, and cells and/or a recessed portion-forming material both having an average diameter ranging from 0.05 to 290  $\mu\text{m}$ , dispersed in said matrix, and occupying a region ranging from 0.1% by volume to 5% by volume based on an entire volume of said pad, said matrix having a major surface which faces said treating film and has a roughness of 5  $\mu\text{m}$  or less.

as recited in independent claim 11, from which claims 17-18 depend.

Jang et al. fails to cure the deficiencies of Burke. Jang et al. only teaches a method for forming a planarized trench fill layer within a trench in a substrate. Jang et al., ABSTRACT.

Jang et al. only mentions performing CMP processes to planarize the trench filler layer. Jang et al., col. 10, ll. 19-28. Jang et al. fails to teach or suggest at least

subjecting said treating film to polishing treatment using a polishing pad while feeding a slurry onto said treating film, said polishing pad comprising a matrix, and cells and/or a recessed portion-forming material both having an average diameter ranging from 0.05 to 290  $\mu\text{m}$ , dispersed in said matrix, and occupying a region ranging from 0.1% by volume to 5% by volume based on an entire volume of said pad, said matrix having a major surface which faces said treating film and has a roughness of 5  $\mu\text{m}$  or less.

as recited in independent claim 11.

In view of the above, Burke and Jang et al., taken alone or in combination, fail to teach or suggest each and every element of independent claim 11, from which claims 17-18 depend.

Claims 17-18 are therefore allowable over Burke and Jang et al.

**Conclusion:**

In view of the foregoing, Applicants request reconsideration of the application and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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Dated: February 14, 2006

By: \_\_\_\_\_

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